



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/663,024	09/15/2003	Khalil Amine	Q201-US1	2546
31815 7590 04/09/2007 MARY ELIZABETH BUSH QUALLION LLC P.O. BOX 923127 SYLMAR, CA 91392-3127			EXAMINER ECHELMeyer, ALIX ELIZABETH	
			ART UNIT 1745	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE 3 MONTHS			MAIL DATE 04/09/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/663,024

Applicant(s)

AMINE ET AL.

Examiner

Alix Elizabeth Echelmeyer

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) 10-12, 19, 20 and 34-44 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 13-18 and 21-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

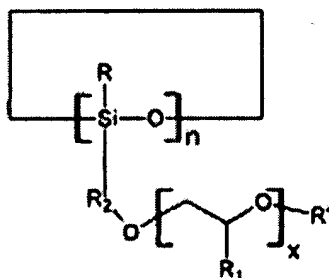
1. Claims 10-12, 19, 20 and 34-41 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species and groups, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on January 11, 2007.
2. Newly submitted claims 42-44 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: they are drawn to the same subject matter as withdrawn claims 10-12.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 42-44 withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

3. Claims 1-9, 13-18 and 21-33 are pending and are rejected for the reasons given below.

Specification

4. The disclosure is objected to because of the following: the cyclic polysiloxane,



[0009] wherein R is an alkyl or aryl group; R' is an alkyl or aryl group; R₁ is hydrogen or an alkyl group; R₂ is a spacer made up of one or more CH₂ groups; n is from 1 to 100; and x is from 1 to 30.

cannot exist for values of n=1.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not possible to have a cyclic polysiloxane having only one repeat of the Si-O unit.

7. Claim 30 recites the limitation "[EO]/[Li]". There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1-7, 13, 17, 18 and 28 are rejected under 35 U.S.C. 102(e) as being anticipated by Miura et al. (US Patent 6,858,351).

Regarding claim 1, Miura et al. teach an electrolyte for an electrochemical device (column 1 lines 17-18). The electrolyte of Miura et al. includes an organic silicon compound having an ethylene oxide unit (column 1 lines 63-37). The organic silicon may be cyclic (column 7 lines 4-7).

As for claims 2-6, the ethylene oxide unit is shown in formula (v) (column 2 lines 55-60). It contains 0 to 3 CH₂ groups (column 2 line 63) and a polyethylene oxide moiety (column 2 line 59).

As for claims 7 and 17, the electrolyte is cross-linked (column 6 lines 60-65).

Regarding claim 13, the electrolyte of Miura et al. also includes a lithium salt (abstract, column 1 line 67).

With regard to claim 18, the electrolyte of Miura et al. may be solid (column 15 line 13).

Art Unit: 1745

Regarding claim 28, the desired molecular weight of the polymer is desirably 10^4 - 10^7 g/mol (column 5 lines 35-40).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 8, 9 and 21-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miura et al. in view of Kennedy (US Pre-Grant Publication 2006/0106187).

The teachings of Miura et al. as discussed above are incorporated herein.

Miura et al. teach an electrolyte including a cyclic silicon compound having an ethylene oxide unit that is cross linked to form an electrolyte for an electrochemical device. The cross linked membrane encapsulates lithium salt in order to provide for transfer of lithium ions to release electricity.

Miura et al. fail to teach the polysiloxane of claim 8.

Kennedy teaches a cross-linked network of cyclic polysiloxanes (abstract) that may be used as encapsulating materials for applications in the electronics industry ([0004]).

As seen in Figure 2 of Kennedy, the network is made of cross-linked cyclic siloxane molecules all having the same (Si-O) base.

As for claim 9, if the electrolyte of Miura et al. was made with the cyclic polysiloxane of Kennedy, it would inherently be liquid.

Regarding claims 21-25, Kennedy teaches siloxane-based cross-linking agents as well as the polyethylene oxide ones seen in Figure 2 ([0027], abstract).

Further, Kennedy teaches that his network polymers made from the taught cyclic siloxane groups and cross-linking polymers are strong, elastic, and thermally stable ([0003]).

It would be desirable to use the cyclic siloxane groups of Kennedy in the electrolyte of Miura et al. in order to form an electrolyte that was strong, elastic, and thermally stable.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the cyclic siloxane groups of Kennedy in the electrolyte of Miura et al. in order to form an electrolyte that was strong, elastic, and thermally stable.

12. Claims 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miura et al. in view of Wietelmann et al. (WO 02/28500 A1, with US Pre-Grant Publication 2004/0096746 serving as a translation).

The teachings of Miura et al. as discussed above are incorporated herein.

Art Unit: 1745

Miura et al. teach an electrolyte including a cyclic silicon compound having an ethylene oxide unit and a salt.

Miura et al. fail to teach that the specific lithium salt, for example a lithium bis(chelato) borate.

Wietelmann et al. teach that the use of lithium chelato complexes, such as lithium bis(oxalate) borate, is common in lithium batteries [0002]).

It would be desirable to one having ordinary skill in the art to use the lithium chelato complexes of Wietelmann et al. to provide chemical stability and good conductivity.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a common of lithium chelato complexes, such as lithium bis(oxalate) borate, as the lithium salt in the battery of Miura et al. in order to provide chemical stability and good conductivity.

13. Claims 26, 27 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miura et al. in view of Narukawa et al. (US Patent 6,534,216).

The teachings of Miura et al. as discussed above are incorporated herein.

Miura et al. teach the electrolyte of claim 1 but fail to teach a solid polymer also included in the electrolyte.

Narukawa et al. teach an electrolyte for a non-aqueous electrolyte cell. Narukawa et al. further teach that as viscosity increases, there is a problem with impregnation of the electrolyte. In order to overcome these problems, the electrolyte is preferable made

Art Unit: 1745

of solid polymer polyacrylonitrile and solid polymer poly(vinylidene fluoride) (column 4 lines 21-39).

It would be desirable to use the solid polymers of Narukawa et al. in the electrolyte of Miura et al. in order to be able to control the viscosity and impregnation of the electrolyte.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the solid polymers of Narukawa et al. in the electrolyte of Miura et al. in order to be able to control the viscosity and impregnation of the electrolyte.

As for claim 29, Miura et al. in view of Narukawa et al. fail to teach the specifically claimed viscosity. It would have been obvious to one having ordinary skill in the art at the time the invention was made to determine the optimum viscosity, since viscosity influences the ease with which the electrolyte impregnates. It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. MPEP 2144.05 (IIB)

14. Claims 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miura et al. in view of Hanson et al. (US Pre-Grant Publication 2001/0001053).

The teachings of Miura et al. as discussed above are incorporated herein.

Miura et al. teach a lithium battery with the electrolyte of the claimed invention but are silent on the anode and cathode materials. Since the battery is a lithium battery, it inherently would have a lithium-based anode.

Hanson et al. teach a lithium battery having an anode and cathode. Hanson et al. teach that a typical anode for a lithium battery is a lithium material, while a metal oxide such as lithiated vanadium is used for the cathode.

It would be desirable to use the anode and cathode materials of Hanson et al. in the battery of Miura et al. since it is taught by Hanson et al. that those materials are typically used to generate electricity and transfer ions in a lithium battery and since Kang et al. does not disclose specific materials for the electrodes.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the anode and cathode materials of Hanson et al. in the battery of Miura et al. since it is taught by Hanson et al. that those materials are typically used for the electrodes and since Miura et al. does not disclose specific materials for the electrodes.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alix Elizabeth Echelmeyer whose telephone number is 571-272-1101. The examiner can normally be reached on Mon-Fri 7-4:30.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's trainer, Susy N. Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1745

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Alix Elizabeth Echelmeyer
Examiner
Art Unit 1745

aee


SUSYTSANG-FOSTER
PRIMARY EXAMINER